

REMARKS

The invention relates to textile floorcoverings composed of more than one layer, wherein the layers have been bonded by an adhesive which comprises, as binder, as aqueous dispersion of a mixture made from a polymer A) at least 60% by weight of which is composed of ethylene and from a polymer B) at least 60 by weight of which is composed of vinylaromatics, dienes or mixtures of these, wherein the textile floorcovering is preferably a tufted carpet. Such carpets are traditionally made by bonding a tufted backing fabric with a secondary backing using an adhesive. Such adhesives have included styrene-butadiene copolymers. Such adhesives have also been used as a precoat in which pile material is tufted through the backing fabric, i.e., pulled and then fixed by applying a binder. The prior art adhesives have not been fully satisfactory.

As recited in Claim 1, the present invention is a textile floorcovering having more than one layer, wherein the layers have been bonded by an adhesive which comprises, as binder, an aqueous dispersion of a mixture made from a polymer A), at least 60% by weight of which is composed of ethylene and from a polymer B), at least 60% by weight of which is composed of vinylaromatics, dienes or mixtures of these, wherein the textile floorcovering is a tufted carpet, and wherein one layer is a tufted backing fabric, and one layer is a secondary backing bonded to said tufted backing fabric by said adhesive.

Additionally, as recited in Claim 13, the invention is an aqueous adhesive comprising, as binder, an aqueous dispersion of a mixture made from a polymer A), at least 60% by weight of which is composed of ethylene and from a polymer B), at least 60% by weight of which is composed of vinylaromatics, dienes or mixtures of these, and comprising a thickener, where the thickener is a copolymer of ethylenically unsaturated compounds at least 50% by weight of which are ethylenically unsaturated acids, ethylenically unsaturated amides or mixtures of these.

As recited in Claim 21, the invention is also a textile floorcovering having more than one layer, wherein the layers have been bonded by an adhesive which comprises, as binder, an aqueous dispersion of a mixture made from a polymer A), at least 60% by weight of which is composed of ethylene and from a polymer B), at least 60% by weight of which is composed of vinylaromatics, dienes or mixtures of these, wherein the proportion by weight of the polymer A) is less than 10% by weight, based on the total of A) and B).

The claimed inventions also include a process for producing a textile floorcovering.

The specification contains comparative data between the presently-claimed invention, and prior art adhesives based on butadiene/styrene copolymer. Table 1 at pages 8-9 of the specification lists precoats and adhesives used in the comparative data. Adhesives 1, 4 and 5 are for purposes of comparison, since they do not contain presently-recited polymer A). With preliminary application of one of the precoats, the strength of the bond between a precoated backing fabric and a secondary backing was determined, as described in the specification beginning at page 9, line 37. Using three different combinations of tufted backing fabric and secondary backing, wet and dry strength adhesive performance was evaluated, as shown in Tables 2-4, at pages 10-11 of the specification. As shown therein, the prior art adhesives were generally inferior to the adhesive of the presently-claimed invention.

The above-discussed results could not have been predicted by the applied prior art, which is now discussed.

The rejection of Claims 1-3, 7, 8, 11, 12, and 14-17 under 35 U.S.C. § 103(a) as unpatentable over JP58-152037 (JP '037), is respectfully traversed. JP '037 discloses a fireproof backing composition for carpeting comprising the combination of a fire-retarding plasticizer and a polymer composition, which polymer composition consists of 40-95 wt% of an emulsion of vinyl chloride-ethylene (III) or vinyl chloride-vinyl acetate-ethylene copolymer (IV) or their modified material (V), and 5-60% of a synthetic rubber latex (VI),

which synthetic rubber latex may be a butadiene copolymer such as styrene-butadiene, acrylonitrile-butadiene, or methyl methacrylate-butadiene. JP '037 further discloses that the weight ratio of vinyl chloride to ethylene to vinyl acetate in (presumably) components (III) and (IV) is 30-95:5-70:55-0.

Based on the above disclosure, the Examiner finds that the above-described polymer composition of JP '037 meets the limitations of the presently-recited mixture made from polymer A) and polymer B). The Examiner additionally relies on Official Notice for other limitations in the claims, i.e., that conventional carpets are predominantly comprised of a woven polypropylene primary backing which is tufted with face yarns, an adhesive latex backing, and a secondary backing of a woven polypropylene fabric, and that fillers or lack thereof are well known in the art of carpets, and when used, it is well known to use them in an amount of up to 200 pbw.

In reply, the presently-recited binder is recited as bonding the layers of a tufted carpet, wherein one layer is a tufted backing fabric, and one layer is a secondary backing bonded to the tufted backing fabric. The binder is not a backing *per se*, which is what JP '037 discloses. While the Examiner finds that the fireproof backing composition of JP '037 is an "adhesive" backing, there is no disclosure therein that it is adhesive. Moreover, even if it had adhesive properties at one time, such as during its preparation, it presumably would not be adhesive in its final form. There is simply no disclosure or suggestion in the art, even if the facts which the Examiner takes Official Notice of are true, that a material used for carpet backing would find use as an adhesive for bonding adjacent layers of carpeting, including a tufted backing fabric bonded to a secondary backing.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The rejections under 35 U.S.C. § 103(a) of:

Claim 4 over JP '037 in view of U.S. 6,162,848 (Lattime et al);

Claims 5, 6 and 13 over JP '037 in view of U.S. 5,851,625 (Smesney et al); and
Claims 18-21 over JP '037 in view of JP58-041972 (JP '972),
are respectfully traversed.

The disclosures and deficiencies of JP '037 have been discussed above. Neither
Lattime et al, Smesney et al, and/or JP '972 remedy these deficiencies.

Thus, even if a styrene-butadiene rubber of JP '037 were carboxylated, as disclosed by
Lattime et al, the result would still not be the presently-claimed invention.

Similarly, even if a thickener, as disclosed by Smesney et al, were added to the carpet
backing composition of JP '037, the result would not be the presently-claimed invention.

Finally, the Examiner relies on JP '972 for the proposition that it would be obvious to
modify the composition of JP '037, which requires a minimum of 40 wt% of the ethylene-
containing polymer, to an amount as low as 10 wt%, based on the disclosure in JP '972,
which is of a flame-retarding backing for floor covering. In reply, just because compositions
exist having a lesser amount of ethylene-containing copolymer than the one disclosed in JP
'037 does not provide motivation to change the amount in JP '037. Indeed, JP '037 and JP
'972 are assigned to the same assignee and were published around the same time. Clearly, if
JP '037 thought that their particular fireproof backing composition for carpeting would be
useful by including a lower amount of ethylene-containing copolymer than the 40 wt%
minimum, it would have been disclosed therein. Nevertheless, even if JP '037 and JP '972
were combined, the result would still not be the presently-claimed invention, since neither
reference discloses or suggests an adhesive for bonding respective carpet layers.

For all the above reasons, it is respectfully requested that these rejections be
withdrawn.

The rejection of Claim 21 under 35 U.S.C. § 103(a) as obvious over U.S. 5,403,884
(Perlinski), is respectfully traversed.

Perlinski discloses a process for flocking cured or uncured elastomeric substrates comprising the steps of applying to the substrate an aqueous adhesive comprising 10 to 100% of an alkaline dispersion of an ethylene carboxylic acid copolymer and 0 to 90% of an aqueous elastomeric dispersion; electrostatically applying flocking fibers thereto, and drying the thus-flocked substrate (column 1, lines 52-58). The ethylene carboxylic acid copolymer is preferably present in an amount of 50 to 70% by weight (dry) of the flocking adhesive composition. The aqueous elastomeric dispersion may be, for example, carboxylated styrene-butadiene (column 5, lines 1-5). In the exemplified adhesives of Perlinski which contain such a carboxylated styrene-butadiene (adhesives A and D), the amount of ethylene carboxylic acid copolymer, i.e., ethylene-acrylic acid copolymer, is approximately 73% by weight of the total amount of said copolymer and the carboxylated styrene-butadiene $[240 \div (240 + 85)]$. Perlinski discloses additionally that "viscosity improvers such as fumed silica, etc." can be added (column 6, lines 11-14).

Perlinski neither discloses nor otherwise the presently-claimed invention of Claim 21, since the amount of polymer A) is outside the respective amount disclosed in Perlinski.

In the Office Action, the Examiner finds that since Perlinski discloses a minimum amount of 10%, then it would be obvious to employ an amount less than 10%, such as 9%, since it has been held that discovering an optimum value of a result-effective variable requires only routine skill in the art.

In reply, the Examiner's argument might have some weight if Applicants were asserting that they have found an optimum percentage between the 10-100% range in Perlinski. However, Claim 21 is outside this range. It is clearly not obvious to optimize a variable outside the range in the reference. Moreover, Perlinski discloses a preferred range of 50-70%. Thus, Perlinski already directs a person skilled in the art that if optimization is to be

further carried out, it would be within the 50-70% range. Thus, Perlinski actually directs persons skilled in the art away from 10%, let alone a percentage less than 10%.

For all the above reasons, it is respectfully requested that the rejection over Perlinski be withdrawn.

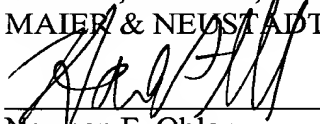
The rejection of Claim 13 under 35 U.S.C. § 103(a) as unpatentable over Perlinski in view of Smesny et al, is respectfully traversed. The disclosures and deficiencies of Perlinski have been discussed above. Smesny et al does not remedy these deficiencies. Even if a thickener, as disclosed by Smesny et al, were added to the aqueous adhesive of Perlinski, the result would still not be the presently-claimed invention. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claim 15 under 35 U.S.C. § 112, second paragraph, is respectfully traversed. It should now be clear that the styrene-butadiene copolymer recited in Claim 15 is not limited to polymer B) of Claim 1, since it is the binder used to fix the threads to the tufted backing fabric, not the binder for bonding respective layers. Accordingly, it is respectfully requested that this rejection be withdrawn.

All of the presently-pending claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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